

## REMARKS

Claims 7-13 are pending in the present application. Claim 7 has been amended in this response to improve form. No new matter was introduced as a result of the amendments. Support for the amendment may be found, for example in paragraphs [0018-21] of the Applicant's Specification. Entry of the amendments and favorable reconsideration is respectfully requested.

Claims 9-10 and 13 were objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form, including all of the limitations of the base claim and any intervening claims.

Claims 7, 8, 11 and 12 were rejected under 35 U.S.C. §102(b) as being anticipated by Feulner et al. (US Patent 6,366,393). Applicant respectfully traverses this rejection.

Specifically, Feulner fails to teach or suggest the features of "detecting a change in input or output power of all channels, wherein when the change of input power occurs within a time interval that is smaller than a reaction time of the amplifier, the accumulated input and output power is measured, and, using the measured state of gain, a new pump power value is determined so that the gain curve of the amplifier becomes substantially constant" as recited in claim 7.

Feulner discloses an optical amplifier 101 coupled to an optical fiber 105 for receiving a WDM signal comprising individual optical channels where each channel is associated with a particular wavelength (col. 3, lines 58-61). A pump source 110 is used to supply pump power to excite the gain medium of optical amplifier 101 for amplifying the WDM signal provided as input to optical amplifier 101. According to Feulner, pump control 120 is used for controlling the amount of pump power supplied by pump source 110. By changing the amount of pump power, the amount of gain provided by optical amplifier 101 is controlled (col. 4, lines 5-9).

Feulner teaches that the pump power is controlled as a function of input power and "without knowing the optical output power" (col. 5, lines 37-38). Each of the pumps disclosed in Feulner are associated with a particular wavelength, or pump signals emanating from wavelength-selective couples (207, 208) (see col. 4, lines 47-56). Thus Feulner does not detect a change in input or output power of all channels, as presently claimed.

Furthermore, claim 7 recites that "the change of input power occurs within a time interval that is smaller than a reaction time of the amplifier." The Office Action points to the fact that Feulner discloses a sub-microsecond time scale (see Abstract) - however, this appears to be a time interval that is not smaller than the reaction time of the amplifier. In col. 6, lines 47-61, Feulner provides:

[T]he important aspect here is that gain can be controlled on a very fast, sub-microsecond basis if needed. That is, pump power can be changed to control the gain of the optical amplifier on a sub-microsecond time scale from the time that a change in input power is detected. One such hardware implementation is shown in FIG. 4. In particular, FIG. 4 shows a simplified block diagram of the operations carried out by circuitry in control element 220 for deriving the appropriate pump power according to the relationship  $P_{PUMP} = C_1 + (C_2 \times P_{IN})$ . Initially, coefficients  $C_i$  can be defined based on the particular optical amplifier's characteristics and operating parameters.

In connection with FIG. 6, Feulner discloses an alternate embodiment, which deals with temperature effects (col. 8, lines 1-13), where a slower response is required. Feulner states:

It should be noted, however, that although the basic principles of operation for photodetectors 240 and 703 are very similar, the performance requirements (and thus the particular device used in the system) may be very different. *In particular, photodetector 240 **has to react** on a sub-microsecond time scale to the "fast" changes in input conditions, while photodetector 703 is measuring "slow" changes which may even be on the order of milliseconds or slower* (col. 8, lines 32-39).

Thus, the reaction time of the amplifier in Feulner is designed to specifically deal with such response times, and as such, the change of input power occurs within a time interval that is consistent with a reaction time of the amplifier, and not smaller.

For at least these reasons, Applicant submits the rejection under 35 U.S.C. §102 is traversed, and earnestly requests the withdrawal of same. In light of the present amendments and arguments, Applicant respectfully submit that claims 7-13 are allowable. Applicants respectfully submit that the patent application is in condition for allowance and request a Notice of Allowance be issued. The Commissioner is authorized to charge and credit Deposit Account No.

02-1818 for any additional fees associated with the submission of this Response. Please reference docket number 112740-1141.

Respectfully submitted,

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